

Public Water Supply Lead and Copper Sampling Plan Requirements



Acknowledgement

The following lead and copper sample plan template was developed jointly with the Iowa Department of Natural Resources and the Iowa Rural Water Association to assist public water systems in developing and maintaining their lead and copper sample plans in the state of Iowa. Many thanks to everyone who participated and provided input in the development of this document.

The forms used in this document were developed by the United States Environmental Protection Agency and the Iowa Department of Natural Resources.

This plan should be provided to and reviewed by all persons responsible for lead and copper sampling.

The model plan can be modified as needed as long as the required components as listed in the rules are contained in the plan.

If you should have any questions please contact the IDNR:

Regional Field Offices

FO 1, Manchester	563-927-2640
FO 2, Mason City	641-424-4073
FO 3, Spencer	712-262-4177
FO 4, Atlantic	712-243-1934
FO 5, Des Moines	515-725-0268
FO 6, Washington	319-653-2135
IDNR Water Supply	515-725-0282 FAX: 515-725-0348

Be sure to include your 7-digit Public Water Supply Identification number (PWSID)/Permit Number located on the front page of your operation permit on all correspondence and sampling sheets. This number should also be handy when contacting your contract lab or the department.

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Section 1

Public Water Supply Lead and Copper Sample Site Plan Selection Criteria for Community Systems

All public water supplies must complete a materials evaluation of their system to identify their pool of sample sites. Samples must be collected from Tier 1 sites unless there are not sufficient sites, then Tier 2 sites may be used. If there are not sufficient Tier 1 and 2 sites then Tier 3 sites may be used.

Tier definitions are as follows:

- Tier 1 – includes single family structures that;
 - Contain copper pipes with lead solder which was installed after 1982 or;
 - Contain lead pipes or;
 - Is served by a lead service line
 - *Multi-family structures may be used as a Tier 1 site when multi-family structures comprise at least 20% of the structures served by the water system.*
- Tier 2 – includes multi-family structures and buildings that;
 - Contain copper pipes with lead solder which was installed after 1982 or;
 - Contain lead pipes or;
 - Is served by a lead service line
- Tier 3- Includes single family structures that contain copper pipes with lead solder which were installed prior to 1983

Tier Categories - Use the following to identify the Tier and category of each site:

Tier 1

- Single family – copper pipe with lead solder constructed after 1982
- Single family – lead pipes
- Single family – lead service
- Multi-family - copper pipe with lead solder constructed after 1982
- Multi-family – lead pipes
- Multi-family – lead service

Tier 2

- Building – copper pipe with lead solder constructed after 1982
- Building – lead pipes
- Building – lead service

Tier 3

- Single family – copper pipe with lead solder constructed before 1983

If not enough Tier 1, 2 or 3 sites are available, random sites may be chosen.

- Random location

Iowa Public Water Supply Lead and Copper Samples Sites

Community: _____

PWSID#: _____ Number of Samples Required: _____

NO.	Address	Tier Level	Selection Criteria	Primary or Alt.
00	Example: 0000 Any Street – Anytown, Iowa	1	A	Primary
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Lead and Copper Sampling Procedures

All lead and copper samples must be first-draw samples and shall be 1 liter in volume. The water should have stood motionless in the plumbing system (not used) of each sample site for a minimum of six hours. While the water cannot be used for more than six hours, do not collect samples from sites which have not been used for an extended period of time; such as a site which has had no water use for several days, i.e. a weekend.

First-draw residential samples shall be collected from the cold water kitchen or bathroom sink only. First-draw nonresidential samples shall be collected from an interior cold water tap from which water is typically drawn for consumption.

Sampling sites must not include faucets which have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants. This includes such devices as filters, softeners, RO systems, etc.

First-draw samples may be collected by the system or the system may allow residents to collect samples after receiving instruction on the proper sampling procedures.

A water supply system shall collect each first-draw tap sample from the same sampling sites used in the previous round of sampling unless a change of sampling site is documented and submitted to the IDNR. (See section 3)

Sites and Situations to Avoid

Do not use

- A mop sink, outside faucet or a tap that is not generally used or intended for human consumption
- A site which is vacant (*don't make special arraignments to get access to site*)
- A site which has undergone recent (within the last 6 months) plumbing improvements or changes including faucets at the specific sample location
- A tap that has any type of treatment
- A site where the owner or resident is uncooperative

Caution

The PWS is ultimately responsible for the sample result. Improper sampling by a resident may not be grounds for invalidation of a sample result by IDNR. The PWS should provide clear instructions to the residents and should thoroughly review the information and comments provided on the sample sheet prior to submitting the sample to the laboratory.

Example of Lead and Copper Sampling Instructions for Homeowner or Resident

Please read these instructions before opening the sample bottle

Sampling Requirements

- Do not rinse or overfill the bottle
- Samples should be collected from the kitchen or bathroom faucet. Do not use an outdoor faucet. If you have sampled before please use the same kitchen or bathroom faucet you have used previously.
- The night before sampling, run the faucet for 2-3 minutes, then do not use water from the faucet for at least 6 hours.
- Collect the sample after at least 6 hours before the faucet is used for anything else.

Sampling Steps

1. Open the bottle and hold under the faucet.
2. Turn the water on to a low flow and collect the first water that comes out of the faucet. (DO NOT RUN WATER FROM THE TAP BEFORE FILLING THE BOTTLE)
3. Fill the bottle to the shoulder.
4. Place lid on bottle and tighten cap securely.
5. Fill in label completely except for the sample ID.
6. Place bottle in shipping or pickup container.
7. Return the sample to the water supply as soon as possible.

Please note on the sample sheet and notify your water supply of the following conditions:

- If any plumbing repairs or pipe replacements have been done in the last 5 years.
- If you have a water softener or other home treatment or filter.

If you have any questions contact the following:

Name: _____ Phone #: _____

TO BE COMPLETED BY THE RESIDENT		
Water was last used:	Time _____	Date _____
Sample was collected:	Time _____	Date _____
I have read the above directions and have taken a tap sample in accordance with these instructions.		
Signature _____		Date _____

Thank you for your help!

Section 2

Calculating the 90th Percentile During Initial, Follow-up, Routine and Reduced Monitoring

If you collect 5 samples, calculate your 90th percentile as follows:

- Rank your samples in order of concentration (mg/l) from lowest to highest.
- Find the average of the two highest results by adding the results together and dividing by two.
- The resulting number (average) is the 90th percentile

EXAMPLE

Sample Site #	Sample Results
1	0.001
2	0.001
3	0.006
4	0.008
5	0.014

$$0.008 + 0.014 = 0.022$$

$$0.022/2 = 0.011$$

$$90^{\text{th}} \text{ percentile} = 0.011 \text{ mg/l}$$

This is the number to record on Form 141A and reported to the IDNR

If you collect 6 or more samples, calculate your 90th percentile as follows:

- Rank your samples in order of concentration (mg/l) from lowest to highest.
- Take the total number of samples collected and multiply by 0.90. The result will tell you which sample to record.
- If the number is not a whole number, round to the nearest whole number.
 - 12.7 would be rounded to 13.0 – 12.2 would be rounded to 12.0
- If the number is exactly in the middle of two whole numbers, round to the nearest even number.
 - 12.5 would be rounded to 12.0 – 13.5 would be rounded to 14.0

EXAMPLE IF YOU COLLECTED 10 SAMPLES

$$10 \times 0.9 = 9$$

Sample #9 is the 90th percentile and should be recorded on Form 141A

Sample Site #	Sample Results
1	0.001
2	0.001
3	0.001
4	0.001
5	0.001
6	0.004
7	0.005
8	0.006
9	0.008
10	0.010

The 90th percentile is 0.008 mg/l and should be recorded on Form 141A.

Please note these are examples only, you will have to insert your own results to determine your 90th percentile.

90th Percentile Summary Form

(use this format if your lab does not provide a 90th percentile summary for you)

PWSID#: _____

Public Water Supply Name: _____

Results of lead monitoring:

	Date Collected	Sample Location	Lead Result	Tier ID
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

90th percentile for lead: _____

Results of copper monitoring:

	Date Collected	Sample Location	Lead Result	Tier ID
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

90th percentile for copper: _____

Keep this form for your records. If you change sample locations or exceed the 90th percentile, also submit this to the DNR at:

Mail to: Department of Natural Resources
Water Supply Section
401 SW 7th St. Suite M
Des Moines, Iowa 50309-4611

Section 3

Making Changes to Sampling Site Locations

Make an assessment of your ability to sample a sufficient number of appropriate sites from your lead and copper plan well in advance of the monitoring period. Making contact with the resident early and determining whether their home still meets the selection criteria as a sample location will eliminate this variable. Furthermore, lead and copper samples should be collected early in the monitoring period to ensure samples arrive at the lab in a timely fashion and are analyzed well before the end of the monitoring period.

Changes to sampling sites are allowed when water systems can no longer gain access to the site or if the original site location no longer meets the Tier selection criteria. For example, if a home is vacant or demolished, if a softener is added or plumbing upgrades have been made - the structure no longer meets the Tier criteria.

This change in location must be submitted to the department using the Samples Site Identification and Certification/Change of Sampling Sites form provided below.

Additional changes can also be made if you add new sampling sites provided they meet the requirements of a proper sampling location. It is advisable to submit a site change request before you take your routine lead and copper samples.

Your lead and copper plan must be updated whenever there is an addition or deletion of a site and you are also encouraged to update the plan to identify sites that meet the requirements of proper sampling locations that can be readily substituted if needed during future monitoring events.

Contact your DNR permit writer or DNR field office representative for a comprehensive list of sampling locations that have been used in the past.

PWSID # _____ NAME OF PUBLIC WATER SUPPLY: _____

Month & Year Samples were collected: _____

SAMPLES SITE IDENTIFICATION AND CERTIFICATION

RESULTS OF MONITORING

Samples Required _____ # Samples Submitted _____ 90th Percentile Lead _____ mg/L
90th Percentile Copper _____ mg/L

CHANGE OF SAMPLING SITES

Original Site Address:

New Site Address:

Distance between Sites (approximately):

Targeting Criteria: NEW: _____
OLD: _____

Reason for Change (attach additional pages if necessary):

SIGNATURE (name & title)

Today's Date: _____

EPA Form 141-A

DNR Field Office _____

Lead & Copper Rule Reduce Monitoring Site Selection

Reduced sampling sites shall be selected using the following procedure:

1. From the two most recent six-month rounds of testing, select the round of testing that had the OVERALL HIGHEST lead result.
2. Using the selected round, arrange the sampling sites in order, based on the lead test result, from highest to lowest.
3. Beginning with and including the site with the highest lead result, select and include every other site for reduced monitoring (i.e. highest result, 3rd highest, 5th highest, 7th highest, etc.).
4. After selecting every other site (see #3 above), if it is determined that a specific selected site can no longer be included in the sampling pool, replace the site with the next site on the original list (i.e. replace the 7th highest site with the 6th highest site).
5. This reduced sampling plan must be kept in your file for future reference. You must return to these same sites for each reduced sampling period.

If either the lead or copper action level IS EXCEEDED at the 90th percentile during any reduced monitoring period, you are required to conduct water quality parameter monitoring in accordance with subparagraphs 567 IAC 41.4(1)"d"(2), (3), or (4) during the monitoring period in which the action level was exceeded, and resume standard or base monitoring for at least two consecutive six-month monitoring periods.

Section 4
Lead and Copper Consumer Notice and Certification Forms

PWS Name: _____ PWSID#: _____ Date: _____

LEAD & COPPER CONSUMER NOTICE
ANALYTICAL RESULTS FOR LEAD & COPPER TAP WATER MONITORING

Our public water supply system is required to periodically collect tap water samples to determine the lead and copper levels in our system. Your residence was selected for this monitoring as part of our system's sampling plan. This notice is provided to you with the analytical results of the tap water sample collected at your home.

Sample address: _____ Sample collection date: _____

Analytical Lead result, in mg/L (milligrams per liter): _____

Analytical Copper result, in mg/L (milligrams per liter): _____

Definitions

Action Level (AL): The action level is a concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a public water supply system must follow. The lead action level is 0.015 mg/L. The copper action level is 1.3 mg/L.

Maximum Contaminant Level Goal (MCLG): The maximum contaminant level goal is the level of a contaminant in drinking water below which there is no known or expected risk to health. The MCLG allows for a margin of safety. The lead MCLG is zero. The copper MCLG is 1.3 mg/L.

What are the health effects of lead and how can I reduce my exposure?

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [NAME OF SYSTEM] is responsible for providing drinking water that meets all federal and state standards, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using the water and using only cold water for drinking or cooking. Information on lead in drinking water and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

When replacing your bathroom or kitchen faucet, consider a "lead-free" faucet that meets NSF/ANSI Standard 61 Annex G (California), which is less than 0.25% lead by weight.

What are the health effects of copper and how can I reduce my exposure?

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short period of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor. Flushing your tap before using the water as previously described will also reduce copper levels.

Who can I contact at my water system for more information?

Phone number at our public water supply system: _____

E-mail address at our public water supply system:

Consumer Notice Instructions: Community PWS

Per the Lead & Copper Rule consumer notice requirements, you must complete the lead consumer notice, distribute the notice to each home or building that was tested with its specific lead result, and submit a certification of your activities and a copy of the notice to Iowa Department of Natural Resources (IDNR) at the address listed below.

Consumer Notice Content

You are required to provide the consumer notice to consumers who occupy homes or buildings that are part of your system's lead & copper monitoring program with the analytical results when their drinking water is tested for lead, including those who do not receive water bills. The Consumer Notice must include the mandatory language in the example provided with these instructions. It must be multilingual, where appropriate.

Distribution of the Consumer Notice

Within 30 days of receiving the analytical results from the laboratory, you must provide the required notice to the people served at each residence or building that was a part of the sampling plan. This can be accomplished through direct mail, including it with the water utility bill, or by hand delivery.

Multi-family dwellings: Where testing occurs in buildings with many units, such as an apartment building, the notice must be provided to each individual unit that was tested. The notice does not have to extend to the entire building.

If you wish to use an alternate method that would still meet the requirements, contact the IDNR-Water Supply Operations Section to discuss the method, prior to conducting the notice. (See your current Operation Permit for the contact information.)

Date completed: _____ (*enclose a copy of notice*)

Delivery Certification

I certify under penalty of law that I am familiar with the information submitted in this document and that it is true, accurate, and complete.

Name (print or type) _____ **Title** _____

Signature _____ **Date** _____

You must send a signed copy of this certification form to the IDNR no later than 3 months following the end of the monitoring period. You must include with this certification a representative copy of the consumer notice distributed. Send your consumer notice and certification form to the following address:

**Water Supply Operations Section
Iowa Department of Natural Resources
401 SW 7th St., Suite M
Des Moines, IA 50309-4611**